Lottie Vectors – Information document [3 Dimensional Vector Format]

(Release 2.5x) Fall 2018

This document describes the code numbers which relate to the position references that appear on screen when appended to a vector dataset. It covers releases from 2.5x onwards. Please go to the website at lottiemath.github.io and follow the links there to Lottie Vectors if you have a newer software version.

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While viewing vectors is wthin a 3 dimensional figure window, the datasets used with Lottie Vectors up until this point have all been two dimensional. The purpose of this paper is to outline the move to three dimensional datasets starting with version 2.5x and having full capability by the first of the versions 3.x.

Firstly a new parameter needs to be added to the current vector types in order the 3rd or Z dimension is represented. We will pause here to note that it is already in the plan to provide more dimensions in the future, so the ways in which the extra data is to be added must take these forward events into account.

There are two types of vector used in lottie vectors one uses an angle and magnitude the other uses cart. Coordinates. Either type can be relative or absolute, the angle vectors can be x or y based. To add therefore a z component the follow changes will be made :

Note types 9 and 10 are not defined and shall in these versions default to value 0. Null vector, as 2 dimensional, read in as this type and two other values which are ignored. Also values 19 and 20 are Null but read in as 3 dimensional data, which is the type plus 3 other values which are ignored. This provides a way to include blank vectors in both 2 and 3 dimensions.

The type values for the 3 dimensional vectors are exactly 10 more than the original 2 dimensional vectors. Both types can be mixed within a dataset or within a single definition. So you may define a 3 dimensional position with a 2 dimensional force vector. When defining a 2 deminsional vector, it shall be on the 0 point of the Z axis. Two dimensional force vectors may be given ‘height’ due to their magnitude.

Coord vectors

type=11 **absolute coordinates**
(position [X] [Y] [Z])
type=12 **relative coordinates**
(position [X] [Y] [Z])

Angle vectors

type=13 = **magnitude first then global angle in degrees taken from the y axis going clockwise**
(position [Magnitude] [Y based angle, x/y plane] [Z based angle, z])

type=14 = **magnitude first then global angle in radians taken from the y axis going clockwise**
(position [Magnitude] [relative angle, x/y plane] [Z based angle, z])

type=15 = **magnitude first then relative angle in degrees**
(position [Magnitude] [X based angle, x/y plane] [Z based angle, z])

type=16 = **magnitude first then relative angle in radians**
(position [Magnitude] [X based angle, x/y plane] [Z based angle, z])

type=17 = **magnitude first then global angle in degrees taken from the x axis going anti-clockwise**
(position [Magnitude] [X based angle, x/y plane] [Z based angle, z])

type=18 = **magnitude first then global angle in radians taken from the yxaxis going anti-clockwise**
(position [Magnitude] [X based angle, x/y plane] [Z based angle, z])

Examples :

[11] [10] [25] [-5] [3] (A point defined at (10,25,-5) with a Start label displayed)

[12] [50] [20] [8] [3] [50] [45] (A force vector from point (50,20,8) which is 45 degrees absolute and of a 50 point magnitude

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